



Complete Summary

GUIDELINE TITLE

ACR Appropriateness Criteria™ for acute pancreatitis.

BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Gastrointestinal Imaging. Acute pancreatitis. Reston (VA): American College of Radiology (ACR); 2001. 5 p. (ACR appropriateness criteria). [29 references]

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT
CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY

SCOPE

DISEASE/CONDITION(S)

Acute pancreatitis

GUIDELINE CATEGORY

Diagnosis

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Gastroenterology
Internal Medicine
Radiology
Surgery

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for suspected or known acute pancreatitis

TARGET POPULATION

Patients with suspected or known acute pancreatitis

INTERVENTIONS AND PRACTICES CONSIDERED

1. Ultrasound (US)
2. Intravenous (IV) contrast computed tomography (CT)
3. Gadolinium magnetic resonance imaging (MRI)
4. Magnetic resonance cholangiopancreatography (MRCP)

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of recent peer-reviewed medical journals, primarily using the National Library of Medicine's MEDLINE database. The developer identified and collected the major applicable articles.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Delphi Method)
Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed to reach agreement in the formulation of the Appropriateness Criteria. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1-9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. If consensus cannot be reached by this method, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria and the Chair of the ACR Board of Chancellors.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Acute Pancreatitis

Variant 1: Etiology unknown, first episode of pancreatitis.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Ultrasound	8	
IV contrast CT	8	
Gadolinium MRI	5	
MRCP	5	
Endoscopic ultrasound	5	If needed when initial studies do not determine an etiology.
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Abbreviations: IV, intravenous; CT, computed tomography; MRI, magnetic resonance imaging; MRCP, magnetic resonance cholangiopancreatography

Variant 2: Severe abdominal pain, elevated amylase lipase, no fever or evidence of fluid loss at admission; clinical score pending.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Ultrasound	8	
IV contrast CT	8	
Gadolinium MRI	5	
MRCP	5	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9		

Radiologic Exam Procedure	Appropriateness Rating	Comments
1=Least appropriate 9=Most appropriate		

Variant 3: Severe abdominal pain, elevated amylase lipase, 48 hours later assuming no improvement or degradation (assume no prior imaging).

Radiologic Exam Procedure	Appropriateness Rating	Comments
Ultrasound	8	
IV contrast CT	8	
Gadolinium MRI	5	
MRCP	5	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 4: Severe abdominal pain, elevated amylase lipase, fever and elevated white blood cell count.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Ultrasound	8	
IV contrast CT	8	
Gadolinium MRI	5	
MRCP	5	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Variant 5: Severe abdominal pain, elevated amylase lipase, hemoconcentration, oliguria, tachycardia.

Radiologic Exam Procedure	Appropriateness Rating	Comments
Ultrasound	8	
IV contrast CT	8	

Radiologic Exam Procedure	Appropriateness Rating	Comments
Gadolinium MRI	5	
MRCP	5	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1=Least appropriate 9=Most appropriate		

Abbreviations: IV, intravenous; CT, computed tomography; MRI, magnetic resonance imaging; MRCP, magnetic resonance cholangiopancreatography

Excerpted by the National Guideline Clearinghouse (NGC).

Summary

Imaging tests available for the diagnosis of acute pancreatitis include transabdominal ultrasound, endoscopic ultrasound (EUS), computed tomography (CT) scanning, magnetic resonance imaging (MRI), and magnetic resonance cholangiopancreatography (MRCP). Endoscopic retrograde cholangiopancreatography (ERCP) is used to diagnose chronic pancreatitis and for nonoperative assessment and treatment of choledocholithiasis. The noninvasive examinations may also be used to guide interventional procedures such as diagnostic aspiration and therapeutic drainage. Ultrasound with color Doppler is useful to detect venous complications of acute pancreatitis. Endoscopic ultrasound is useful, when needed clinically, to detect common duct stones when initial studies are negative. Endoscopic ultrasound can often determine an etiology (usually biliary) in patients initially diagnosed with idiopathic acute pancreatitis.

Acute pancreatitis is suspected in patients presenting with epigastric upper abdominal pain that is acute onset, rapidly increasing in severity, and persistent without relief. The intensity of the pain almost always results in the patient seeking medical attention. Differential diagnosis includes mesenteric ischemia, perforated ulcer, intestinal obstruction, biliary colic, and myocardial infarction. Serum amylase and/or lipase levels can be considered diagnostic when the reported value(s) is ≥ 3 times normal. Lipase levels are more specific for acute pancreatitis, as hyperamylasemia may be present in a variety of conditions. Of note is that serum enzyme levels do not correlate with the severity of the disease. Because of the poor correlation of the level of serum enzyme elevation with severity of the disease, clinical scoring systems and imaging tests have been advocated to classify individual patients. Furthermore, the diagnosis may be overlooked in the absence of typical enzyme elevation. In some patients, acute pancreatitis may be present in the absence of enzyme abnormalities.

Imaging tests are performed for various reasons, including detection of gallstones, detection of biliary obstruction, diagnosis of pancreatitis when the clinical situation is unclear, identification of patients with high-risk pancreatitis, and detection of complications of pancreatitis. Ultrasound to detect gallbladder stones should be performed in every patient with acute pancreatitis, even alcoholics. Ultrasound is

also effective in diagnosing biliary obstruction, which, when present, often prompts endoscopic retrograde cholangiopancreatography to relieve the cause of obstruction. Ultrasound is less successful in diagnosing choledocholithiasis and in visualizing the pancreas and peripancreatic region. When necessary clinically, EUS may be useful to diagnose common duct stones. Computed tomography is an insensitive detector of biliary calculi, but is superb in delineating the pancreas and acute pancreatitis-associated abnormalities. Magnetic resonance cholangiopancreatography has a high accuracy in the detection of bile duct stones. While unproved, magnetic resonance imaging with magnetic resonance cholangiopancreatography has the potential to evaluate both the pancreas and biliary tree with a single imaging study in the minority of patients who require imaging to assess severity of acute pancreatitis.

Physiologically based scoring systems such as the APACHE II and Ranson's criteria are designed to identify early prognostic signs that predict severity of clinical course in an individual patient. In 1985, Balthazar et al showed that although clinical scoring systems were highly correlated with increasing CT severity, disease severity was sometimes underestimated by clinical scoring alone. The key criterion for identifying patients at higher risk for fatal pancreatitis is the presence of pancreatic necrosis. Balthazar et al (Balthazar EJ, Robinson DL, Megibow AJ, Ranson JH. Acute pancreatitis: value of CT in establishing prognosis. *Radiology* 1990; 174[2]:331-6) revised their scoring system in 1990 to account for the significance of pancreatic necrosis. There are isolated reports of clinical scoring systems yielding equivalent or superior results to imaging tests. However, it should be remembered that most clinical systems require a second assessment within 48 hours to monitor progression or stability, as opposed to relatively instantaneous evaluation at imaging.

Contrast CT and/or gadolinium enhanced magnetic resonance imaging can both be used to assess pancreatic necrosis and evaluate peripancreatic inflammation and fluid collections. Pancreatic necrosis can be diagnosed when segments of pancreatic parenchyma do not enhance on images obtained following intravenous contrast administration. These unenhanced areas have been proved to represent necrotic regions when correlated with findings at pancreatic debridement. While some have suggested that the site of necrosis within the pancreas may further predict outcome, others have found no such correlation. The presence of peripancreatic fluid collections is usually associated with severe disease.

Controversy has emerged because of the observation that intravenous contrast impairs the microcirculation of the pancreas in rats with acute necrotizing pancreatitis and may increase the severity of the disease. These results could not be reproduced in the opossum. No prospective human trials have been published to date. Most experts believe the benefits of detecting necrosis outweigh any potential risk.

No objective clinical selection criteria exist that can determine which patients should have CT to assess the risk of severe pancreatitis. Imaging is clearly indicated when the cause of abdominal pain is unclear. In patients with known acute pancreatitis, however, CT is reserved for patients with clinical/biochemical/physiologic indications of severe disease. There is no information suggesting that routine CT in patients with milder disease (low

APACHE II or Ranson scores) would result in upstaging a significant number of patients.

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Selection of appropriate radiologic imaging procedures for evaluation of patients with suspected or known acute pancreatitis

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.
- The document does not address interventional procedures or documentation of complications such as abscess, pseudocyst, or pseudoaneurysm.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American College of Radiology (ACR), Expert Panel on Gastrointestinal Imaging. Acute pancreatitis. Reston (VA): American College of Radiology (ACR); 2001. 5 p. (ACR appropriateness criteria). [29 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1998 (revised 2001)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria.™

GUIDELINE COMMITTEE

ACR Appropriateness Criteria™ Committee, Expert Panel on Gastrointestinal Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Philip W. Ralls, MD; Robert L. Bree, MD; Seth N. Glick, MD; Jay P. Heiken, MD; James E. Huprich, MD; Marc S. Levine, MD; Michelle L. Robbin, MD; Pablo R. Ros, MD, MPH; William P. Shuman, MD; Frederick Leslie Greene, MD; Loren A. Laine, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline. It updates a previous version: ACR Appropriateness Criteria™ for acute pancreatitis. Radiology 2000 Jun; 215(Suppl): 203-7.

The ACR Appropriateness Criteria™ are reviewed every five years, if not sooner, depending on the introduction of new and highly significant scientific evidence. The next review date for this topic is 2006.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [American College of Radiology \(ACR\) Web site](#).

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- American College of Radiology ACR Appropriateness Criteria™ introduction. Reston (VA): American College of Radiology; 6 p. Available in Portable Document Format (PDF) from the [ACR Web site](#).

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on March 19, 2001. The information was verified by the guideline developer on March 29, 2001. This summary was updated by ECRI on July 31, 2002. The updated information was verified by the guideline developer on October 1, 2002.

COPYRIGHT STATEMENT

This NGC summary is based on the original guideline, which is subject to the guideline developer's copyright restrictions.

Appropriate instructions regarding downloading, use and reproduction of the American College of Radiology (ACR) Appropriateness Criteria™ guidelines may be found at the American College of Radiology's Web site www.acr.org.

© 1998-2004 National Guideline Clearinghouse

Date Modified: 11/8/2004

The logo for FIRSTGOV, with "FIRST" in blue and "GOV" in red, and a small red star above the "I".

